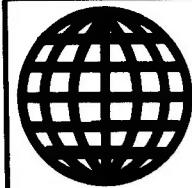
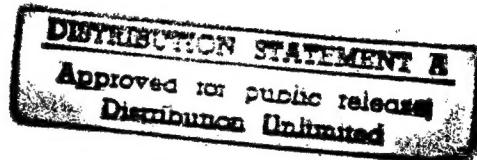


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Soviet Union

USA: ECONOMICS, POLITICS, IDEOLOGY
No 7, July 1990

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USA: Economics, Politics, Ideology

No 7, July 1990

Joint Ventures in USSR: Risk Analysis

914K0001A Moscow SSHA: EKONOMIKA, POLITIKA, IDEOLOGIYA in Russian No 7, Jul 90 (signed to press 28 Jun 90) pp 9-19

[Article by Eric Stubbs, assistant professor at the Harriman School of Business, State University of New York (Stony Brook), and Aleksey Grigoryevich Kvasov, candidate of economic sciences and academic secretary at Institute of U.S. and Canadian Studies]

[Text] Western businessmen are still highly interested in using joint ventures to penetrate the potential Soviet market in spite of the colossal difficulties caused by the perestroika of the economic mechanism in the USSR, the dramatic deterioration of the overall economic situation in the country, and the prejudices much of our public has against foreign capital in any form.

It would be a big mistake to see only the negative side of foreign investments, the side connected with exploitation and the appropriation of profit, especially since these are the attributes of any investment, including the capital investments of Soviet state enterprises.¹ The development of world civilization in the 20th century attests that the extensive attraction of foreign capital and technology in the form of commercial investments is an essential condition for the inclusion of the national economy in the world economic system, can do much to accelerate the industrial development of the host country, and can raise the production and socioeconomic infrastructure up to the world level of development. It would be naive to assume that the obvious advantages accompanying the flow of capital from abroad can be obtained "for free." By the same token, it would be nearsighted, to say the least, to refuse investments which could already do much within the near future to assist in the perestroika of foreign economic operations and also the entire national economy because of their "manifest price." The main problem consists in establishing the necessary conditions for the functioning of this capital and a system of state regulation to secure the maximum national economic impact from the use of this capital.

The very logic of the Soviet reforms testifies that the acknowledgement of the role of foreign investment will have to be reflected in our overall foreign economic strategy quite soon. Reducing the matter to only one form of investment—joint ventures—would be completely wrong. The next step should be the attraction of capital in the form of 100-percent foreign ownership.

In any case, however, the potential foreign investor will always begin by assessing the risk and possible profitability of investments in the Soviet Union. An examination of existing Western theories of risk analysis and specific approaches to it could be useful to foreign

businessmen and also to their Soviet counterparts, because it will give them a better understanding of the foreign partner's line of reasoning. We would like to believe that the day will come soon when the methods of foreign investment risk analysis will also be useful to Soviet economic managers for direct application.

Incompatible Ideas

The increasing uncertainty and instability of the economic situation in the USSR have had an adverse effect on the traditionally favorable assessments of the risk of doing business with the Soviet Union. This, however, is certainly not the only obstacle on the way to closer relations between the Soviet and Western business communities. Other significant impediments are the glaring disparities in the definitions of the purpose and relative importance of such concepts as profit and risk in the two economic mechanisms.

We cannot say that there is complete unanimity in the Western academic and business communities with regard to the academic definitions and actual use of these economic parameters, but we can certainly say that there is a broad consensus on these matters.² Above all, commercial risk and profit are viewed as objective categories. Furthermore, a comparison of the Western and Soviet approaches indicates that the political-economic systems not only serve as one of the factors influencing the degree of risk, but also determine the content of the risk as such. As a result, partners approach the negotiating table with fundamental differences in concepts and terminology, which ultimately creates additional difficulties and friction in the negotiation process and during the stage of agreement on the idea of the joint venture.

Whereas the political and social factors which are taken into account in Western risk analysis can always be reduced to a common denominator and expressed in terms of cost and probability, they acquire a life of their own in the Soviet authoritarian-bureaucratic economic system and relegate purely economic considerations to the background. Income and profit are distinguished by colossal dependence on political and bureaucratic circumstances. Furthermore, this dependence can be direct, through centralized pricing, supply, and redistribution, and also indirect, through "informal" channels of contact between enterprises and decisionmaking bodies. This means, in the first place, that the price of a resource is not at all the deciding factor of its accessibility. In the second place, the methods of economic calculation used by Soviet managers can vary widely, depending on their position in the bureaucratic structure, or can be quite different when they do not belong to it (in the case of cooperatives, for example). In the third place, the goals the enterprise pursues in its economic activity are unstable and contradictory.

It is usually extremely difficult for the Western businessman to understand the specific functions profit

performs in the system of indicators of economic development in the USSR. Many people feel that this is an unimportant indicator. In particular, this is confirmed by the fact that 7-8 percent of all enterprises (1,700 in agriculture and 7,500 in industry and other economic spheres) are operating at a loss of over 5 billion rubles a year.³ What is more, part of the actual loss is concealed with a variety of accounting prices and surcharges. State credit is also used to conceal losses and mismanagement. The unsecured debts of agricultural enterprises have been estimated at 73 billion rubles, for example, and around 100 billion rubles in loan capital is being used in the economy outside the sphere of production.

The role of profit as the strategic motivator of the Soviet state enterprise at a time of reform and the institution of the principles of economic accountability and self-funding is becoming even more vague and contradictory, although this might sound like a paradox. According to the "Law on the State Enterprise (or Association)," for example, it must, on the one hand, "bear all of the responsibility for the observance of state interests, ...the accumulation of socialist property, ...and the guarantee of the profit level needed for operations at a time of full economic accountability and self-funding" (p 7), and its financial activity "should be aimed at creating financial resources for production and social development...and securing the growth of profits (or income)" (p 26); on the other hand, according to the same law, "the enterprise is responsible for the strict observance of price regulations and must not allow overpricing" (p 28), which is clearly incompatible with the first group of goals.⁵

In principle, along with the positive stimuli provided by the introduction of genuine economic accountability—the chance for an enterprise to "live better" through the efficient management of its affairs—there must also be certain negative stimuli, which will make their appearance just as consistently, and without which no kind of "economic democracy" would be possible. The most important of the negative stimuli, the mechanism of enterprise liquidation and bankruptcy, does not have any real influence, however, despite the existence of the appropriate sections in the Law on the State Enterprise. This is no coincidence, because the bankruptcy of a state enterprise essentially signifies the bankruptcy of the part of the administrative bureaucracy managing the economy. Therefore, when an enterprise earns a profit, there is a strong possibility that it will be confiscated without any kind of compensation, contrary to the principles of cost accounting, and will be sent through the channels of intrasectorial redistribution for the purpose of "supporting the stragglers." This method is used each year for the redistribution of 40 billion rubles in the national economy, and this is not dictated by even the minimum requirements of effectiveness,⁶ but is ruthlessly programmed by the very logic of centralized and obligatory planning.

In recent years there has been some progress in increasing proportional capital investments in the Soviet economy from internal sources of financing—enterprise

profits. The fact that enterprise funds already represented 49 percent of all state investments in capital construction in 1989,⁷ all other conditions being equal, should have signified the establishment of a direct connection between profitability and the possibilities of production development. The actual workings of this important stimulus, however, will always conflict with the obvious desire of central economic bodies to retain strict control of the investment process, without drawing any distinctions between "their own" funds and the funds of "others" (enterprises).

By the same token, the actual connection between enterprise profits and the financial compensation of their highest administrative link is extremely weak. The issuance of stock as an additional financial incentive for managers could theoretically give management a greater interest in maximizing the profits of the firm's total economic activity, but the procedures envisaged by law for the payment of dividends from wage funds, combined with their traditionally rigid and centralized regulation (the most characteristic example is the special tax on any increment exceeding 3 percent in 1989-1990), virtually nullify this and many other potential opportunities to harmonize the personal interests of managers with the broader public interest in the achievement of the maximum economic impact by the enterprise.

The Western manager usually strives to attain several strategic objectives at once: a larger share of the market, the steady growth of gross receipts, and more efficient production. Although they differ on the surface from the central goal of maximizing profits, they are not only consistent with the latter, but also enhance its role over the long range. The very conditions of the market compel corporate executives to strive for high profits even when they make decisions on the most routine matters, such as the reinforcement of their own managerial status. Otherwise, the price of stock falls below the potential value (equivalent to market evaluations of the firm's assets per unit of stock capital), and the company turns into a convenient target for takeover by another corporation, with the inevitable replacement of top executives in these cases. For Soviet managers, however, success and risk are connected with other economic parameters. Profit is only one of the many, frequently contradictory indicators and standards used in the evaluation of their performance.

In the West, commercial risk can take the most diverse and sometimes inconsistent forms. Above all, there are the risks limiting investment, such as those connected with new and untested technologies, unfamiliar markets, and unknown products. On the other hand, some risks stimulate capital investment, such as competition risk, in which the competing firm is first to use the potential capabilities of a new market or a technological innovation. The second type of risk is virtually unknown in the Soviet economic system, however, because of the total monopoly of the producer, the "planned" and guaranteed sales, and the low probability of bankruptcy. As a

result, the risks connected with anything new are the dominant factor, and this ultimately leads to stagnation.

In the West, the state usually participates in the risks of private enterprises indirectly by allowing them to write off their losses from their past or future taxable income and thereby giving them a chance to enjoy the benefits of risky investments by applying reasonable tax rates. In the USSR the situation is radically different. In the first place, the real tax rates are such that "excess profits" are effectively confiscated. In this way, enterprises bear all of the losses connected with risks but have no chance of benefiting fully from potential successes. In the second place, because profit is far from the main criterion used in the evaluation of enterprise performance by central state bodies, and because firms operating at a loss are widely subsidized, the growth of income as a form of "payment" for heightened risk could hardly be the main motive of the Soviet partner in a joint venture. The Soviet partner's main concerns are guaranteed deliveries of the necessary raw materials and components of satisfactory quality, the possible consequences of the transfer of the most highly skilled personnel from the main enterprise to the joint venture, the guarantee of payment in hard currency, the danger of the nonfulfillment of plan assignments due to the diversion of resources, the ability to master the new technologies instituted by the Western partner in the joint venture, and so forth.

As a result, the Soviet partner is quite likely to underestimate the Western side's worries about, for example, possible fluctuations in currency exchange rates, personnel turnover, and the stability of contacts with suppliers, because he is more inclined to view them as problems solved by political (or administrative), rather than economic, means. The Soviet partner is free from the rigid imperative to always operate at a profit, but he is generally knows less about the influence of various exogenous factors, such as effective demand, on the profit margin (the existence of sales networks, special professional training systems, post-sale services networks, and other infrastructures).

Potential Partners

As the new economic mechanism takes shape in the USSR and as market relations are gradually introduced, the state enterprises will display fewer differences from Western firms in the principles and conditions of their functioning, and this will make them more appealing to foreign businessmen as partners in joint ventures.

Even today, however, the Soviet economy has production cooperatives which might be described as the counterpart of the Western firm. They are autonomous in matters of financing, supply, pricing, and sales. Their understanding of profit and risk is largely the same as in the West. The cooperative movement is distinguished by high growth rates. Its share of the GNP rose from 1 percent in 1988 to 4.4 percent in 1989. It has sold products and services worth 40.4 billion rubles. The cooperatives are much more flexible in their economic

operations and constitute perceptible competition for the state sector in a number of fields, such as construction, where their operational volume grew almost 23-fold in 1989.⁸ Because of "built-in" strong financial incentives to enhance production efficiency, the development of the cooperative sector has been accompanied by a rapid rise in labor productivity, which exceeded the average for the second through fourth quarters of 1988 by 38.7 percent in 1989.⁹

All other conditions being equal, these circumstances should have turned the cooperatives into the most natural partners of Western partners, but the conflicting attitudes toward the cooperative form of enterprise, both on the level of government and in the society as a whole, created an atmosphere of uncertainty and considerably increased the risk of long-term relations with the cooperatives. Their vulnerability was due to several groups of factors.

First of all, from the political standpoint, in spite of repeated statements by the top-level leadership, the support of the cooperatives still cannot be described as firm and irrevocable.¹⁰ The short history of the development of cooperatives in the country has been full of attempts to limit their rights and freedoms. The situation became even more unpredictable when broad powers in the regulation of cooperative activity were transferred to local government agencies, which are inclined to substitute administrative pressure and prohibitions for economic analysis and a differentiated approach. According to some estimates, the steps taken in the second half of 1989 in the Ukraine, Kazakhstan, Belorussia, Uzbekistan, the Bashkir ASSR, Krasnodar Kray, Moscow and other places could reduce the volume of work and services performed by cooperatives by at least 10 billion rubles, or by one-fourth, in 1990.¹¹

In the second place, the production supply sources of cooperatives and, consequently, of the joint ventures formed with their participation are quite meager and are wholly dependent on the generosity of administrative bodies in the overwhelming majority of cases. Around four-fifths of the cooperatives were established in state enterprises or organizations, from which they lease around 60 percent of their fixed capital and obtain more than three-fifths of their crude resources and materials.¹² Therefore, the loss of their supply base will be possible not only if the attitude of state agencies toward cooperatives should become less supportive, but also if parent state enterprises feel that their cooperative affiliates are competing with them.

In the third place, there is still a tendency toward substantial restrictions on the rights of cooperatives in foreign trade and currency operations. According to the rules of currency auctions, for example, cooperative enterprises are not allowed to participate in them. All of this reduces the cooperatives' freedom to act as partners in joint ventures.

Finally, public opinion, which is still predominantly against cooperatives *per se*, is an important factor. When the USSR State Committee for Statistics surveyed 101,000 people, 14.7 percent had a positive opinion of cooperative and individual forms of labor, and 29.4 percent had a negative opinion. It is true that the support for these types of activity is much stronger among people with a higher education and among administrators—24-25 percent.¹³ As the economic crisis grows more severe, however, the cooperatives are acquiring an “enemy image” and are associated in the public mind with unearned income, speculation, corruption, etc.

Uncontrollable Risks

Foreign investment risk analysis in the West generally begins with a country risk analysis, based on the economic and political factors influencing the credit rating of the country as a whole. The next level is the macroeconomic risk, connected with the specific factors of economic conditions and government economic policy, which can change the economic situation in a country. This is generally followed by the analysis of sectorial risks and, finally, the risks related to the specific features of the projected investment.

The distinctive features of our subject—capital investments in joint ventures in the USSR—underscore the importance of a slightly different kind of analysis, concerned primarily with the group of risks that might be categorized as uncontrollable—i.e., beyond the control of the Western firm—and consequently of primary importance in its decision on the very possibility of investing capital within the territory of the Soviet Union. In this system of classification, controllable risks include the problems of choosing and organizing a project and also the means and methods of the repatriation of profits, the training of personnel, etc. On the whole, these risks are quite distinctive in each specific case and for each specific firm with its own strategy and tactics, and this makes generalizations quite difficult. Uncontrollable risks, on the other hand, are virtually the same for all types of foreign investments in all parts of the USSR.

In essence, the uncontrollable risks are risks on the country and macroeconomic levels. Their analysis, however, is complicated by the need to consider not only the positions of the direct participants in the joint venture, but also the role of the Soviet Government, Western governments, and international firms.

Soviet foreign trade strategy is a major factor in investment risk analysis, not only because of its direct relationship to the problems of generating hard currency revenues, but also as a component of the overall strategy of national economic development, which must be analyzed before any detailed forecasts can be made of long-range tendencies in the country's economic development.

Some of the goals of the fundamental *perestroika* of foreign economic operations in the second half of the

1980s were the elimination of the autarchic model of economic development, a compound increase (from 4- to 5-fold by 2000) in Soviet foreign trade turnover, the approximation of the indicators of developed capitalist countries in our export structure, and the augmentation of proportional exports of machines and equipment from 15 to 40-50 percent.¹⁴ These goals do not seem valid and realistic in all respects.

Of course, we must agree that the retention of the confined and autarchic structure of the Soviet economy would be ruinous for the country's future. The tendency to assign absolute importance to the rates of the expansion of foreign economic turnover and the growth of its share of the GNP, however, is like the old preoccupation with the gross product, because it obscures the main point: the total national economic impact with which the USSR can reach these frontiers. In the middle of the 1980s the Soviet Union caught up with the U.S. export ratio as a result of excellent conditions in the world energy and crude resource markets, but this did not have any effect on the qualitative indicators of national economic development.

The augmentation of exports in the near future will only be made possible by exports of finished goods, including machines and equipment, but the main problem is their extremely low competitiveness. In 1988 exports of machines and equipment were equivalent to 16.2 percent of the country's total exports, but in trade with the West, where the markets constitute the basis of world standards, machines and equipment represented only 3.3 percent of all export sales,¹⁵ and high-technology items represented only 0.23 percent, whereas they constituted 13 percent of the exports of developing countries.¹⁶ According to the most optimistic estimates, only 17-18 percent of the products of the Soviet processing industry will be able to compete on the world market.¹⁷ As for new scientific and technical developments surpassing the world standard, their share of total development projects decreased from 9.1 percent in 1980 to 4.1 percent in 1988.¹⁸ Consequently, even their quick introduction will not improve the situation in the near future.

Under these conditions, a foreign trade strategy based on an export emphasis combined with the restructuring of imports for the purpose of replacing the least effective components (from the standpoint of the national economic criterion) seems more expedient. Only the optimal combination of these two approaches can secure, on the one hand, a gradual increase in exports of processed goods for their more economical production on a larger scale and, on the other, the use of imports as a strong stimulator of competitiveness, ultimately leading to the more organic inclusion of the Soviet economy in international division of labor. If the USSR should make the move to this strategy, joint ventures could be included in this mechanism quite easily because the need to export their products would be balanced by the possibility of working for the domestic market.

The level of development of the production infrastructure and the investment strategy of the host country are also important in risk analysis. On the whole, the capital-labor ratio in the Soviet economy is extremely low by international standards. The problem is compounded by the fact that state capital investments have traditionally been concentrated in gigantic projects and by the fact that the volume of incomplete construction displayed constant growth as a result of the dispersion of capital investments, including those financed by enterprise funds. By 1990 the average construction project took more than double the normative length of time to complete, and incomplete construction represented 94 percent of the annual volume of new investments.¹⁹ As a result, in addition to everything else, the technology specified in the original plans is obsolete by the time industrial facilities begin operations.

Potential foreign investors might also be concerned about the failure to redirect state investments from the sphere of immediate production to the infrastructure, which does not meet the requirements of modern production today. Proportional investments in transportation, communications, trade, public utilities, procurement, and computer services represented 21.6 percent of all capital investments in the second half of the 1980s, which was even lower than the figure at the beginning of the decade.²⁰

One of the main conditions of a stable and favorable climate for foreign investments is a reasonable macroeconomic policy, especially its fiscal component. A country with a poorly managed budget might be viewed by the foreign partner as an undesirable investment risk for several reasons. In the first place, there is a strong possibility of various crises and protracted stagnation. In the second place, the risk of inflation is extremely high, and this makes accurate estimates of expenditures and profits difficult.

One of the common indicators of risk is the relationship of the budget deficit to the GNP, which was at least 11.5 percent in 1988.²¹ At the same time, the indicator in the United States, for example, was 3.2 percent (5.4 percent in fiscal year 1985) and it was nevertheless a matter of deep concern to economists and the government.²²

In 1989, however, there was already a positive shift in this area: Instead of the deficit projected at the beginning of the year, which would have caused this indicator to rise above 13 percent, it was lowered to around 10 percent by the government's purposeful efforts. There is reason to believe that this year it will drop to 6.5 percent.

The issuance of currency is a matter of much greater concern. The amount increased by 56 percent just in 1989²³ and it generally depends directly on budget deficits. The fact that finances have always played only an auxiliary role at best in the management of the Soviet

economy will complicate the establishment of an effective system of macroeconomic regulation and the institution of measures to combat inflation, which passed the double-digit mark in 1988 and reached 10-11 percent in 1989.²⁴

Currency potential—i.e., the ability of the country's economy to generate revenues in hard currency—depends on the existence of human and natural resources, the overall state of the economy, and macroeconomic conditions. Although the domestic economy is in a grave state, long-term forecasts of currency potential might be considered promising primarily because of the Soviet Union's strong resource base. Besides this, the USSR's "conservative approach" to foreign loans, especially short-term credits, which require much greater currency liquidity, is viewed as a positive sign. The Soviet Union's net payments of interest on credit in hard currency in 1987-88 were within 4 percent of its exports to countries with a market economy (the indicator exceeded 15 percent for the six East European CEMA countries combined). Net indebtedness was equivalent to around half of these exports in 1988 (182 percent for the group of East European countries).²⁵

Although it is still too early to say that the Soviet economy is overburdened by long-term credit, the shortage of cash and other liquid assets could be a sizable problem—first of all, because the overwhelming majority of Soviet exports are crude energy resources, which are vulnerable to market fluctuations, and second, because the possibility of the quick reduction of total imports is extremely limited because of the prevalence of agricultural products, vital necessities, and important investment goods in the import structure.

International competition is another risk factor of interest to the foreign partner. The idea that the strategy of international competition is motivating Western firms to penetrate the Soviet market recently became quite popular.²⁶ The colossal potential capacity of the domestic market, the relatively low cost of production factors, and the possibility of creating optimal new global production and sales networks with the inclusion of the USSR in the world economy are all motivating the international corporations of the United States, Western Europe, and Japan to choose the "preemptive option" of being among the first to gain a strong position in the markets of the Soviet Union.

There is also the consideration that the earlier penetration of the market increases the chances of instituting the company's own standards, norms, and technical conditions (or those of a particular industry or country) in this market.

From a certain standpoint, the mass entry of the Soviet market by Western companies might be seen as a positive prospect by the individual firm, even if these companies are its competitors. The growing concentration of foreign business capital in a particular region reaches something approximating critical mass when foreign

enterprises begin interacting with one another as suppliers and consumers of the locally produced goods and services that do not exist in the Soviet domestic market.

The policy of Western states toward economic ties with the USSR is an exceptionally important element of assessments of the risk of participation in a joint venture with a Soviet partner. In any case, business has to consider the opinion of governments (and even of opposition political forces in some cases) because they control powerful instruments of trade, financial, and other restrictions on cooperation with the Soviet Union.

At a time when the climate in the West as a whole is conducive to this kind of cooperation, the distinctive features of the "Eastern policy" of different countries acquire special importance as long as they can give national companies competitive advantages over investors from other states. Some examples of these kinds of stimuli are the direct or indirect participation of government bodies in the crediting of foreign economic exchange, the existence of mutual investment protection, the inclination to give some CoCom [Coordinating Committee for Multilateral Export Control] provisions a "lenient interpretation," the organization of training programs for Soviet economic managers (which would strengthen their inclination to do business with the firms of the given country in the future and provide for the establishment of strong personal contacts), etc.

An analysis of the development of the internal political situation in the USSR as one of the decisive elements of commercial risk forecasting is an extremely difficult task at the present time.²⁷ First of all, the exacerbation of inter-ethnic problems and the progression toward regional economic accountability, which could increase the risk of the disruption of supply and sales channels, warrant consideration, as does the authoritarian system's inclination to oppose the cooperatives when they begin competing with state enterprises, which could suggest a repetition of the situation in attitudes toward joint ventures. The increasingly radical nature of various ecological movements in the USSR would make the behavior of local government agencies less predictable in situations involving industrial projects and could cause delays and raise the cost of projects in the future.

Even this brief analysis of the risk of investments in the Soviet economy from the standpoint of the Western investor indicates that certain illusions must be discarded. It also provides some idea of the reasons for the usually restrained Western attitudes toward this form of cooperation and the reasons for the perceptible degeneration of general evaluations of the USSR as the target of capital investments in recent years. Of course, this depends to a certain extent on the official position of the West, but it would be unrealistic to say that it will take equal effort on both sides before foreign capital can make inroads in the Soviet economy.

In the second half of the 20th century mankind knows of only one way of moving quickly from poverty, hunger,

technological ignorance, and general economic chaos to abundance and the advance frontiers of technical and economic progress: maximum efforts to attract foreign capital. At this time, capital investments in the USSR represent one-eighth of 1 percent (around 1.6 billion dollars by the end of 1989) of the approximately 1.3 trillion dollars in worldwide direct investments originating outside the host country.²⁸

This road to prosperity is not a utopia for the Soviet Union. History already records one "Russian economic miracle" in the late 19th and early 20th centuries, which was made possible largely by incoming foreign capital, representing more than half of all new investments in industry in some years. Furthermore, the allegations that foreign capital came to Russia for the purpose of stealing its natural resources are unfounded. Even the total profits (12.9 percent on invested capital) were far from astonishing.²⁹ Our country, however, took a gigantic and visible leap forward in its development.

The Soviet Union wants genuine breakthroughs and should accordingly put the emphasis in its economic strategy on the purposeful generation of the proper investment climate and begin the rigorous work of establishing the kind of conditions that will appeal to foreign investors. The main initial objective is the de-ideologization of the economy and the renunciation of the principles and theories inhibiting socioeconomic progress.

Footnotes

1. According to available estimates, added value in the national economy of the USSR rose from 119.1 to 144.5 percent just between 1985 and 1988 (NOVOYE VREM'YA, 16 February 1990, p 28). According to other sources, the surplus product in the sphere of physical production ranged from 105 to 116 percent in the first half of the 1980's; the same methods would put the indicator in the United States for this period at around 100 percent (EKONOMIKA I ZHIZN, 1990, No 15, p 5).
2. J. Calverley, "Country Risk Analysis," London, 1985. The methods of risk analysis and various points of view are presented in detail in this work.
3. IZVESTIYA, 26 September 1989; 3 October 1989.
4. Ibid., 26 September 1989; PRAVITELSTVENNYY VESTNIK, 1989, No 25, p 3.
5. "Polnyy khozyaystvennyy raschet i samofinansirovaniye. Sbornik dokumentov" [Full Economic Accountability and Self-Funding. Collected Documents], Moscow, 1988.
6. IZVESTIYA, 29 September 1989.
7. Ibid., 28 January 1990.
8. EKONOMIKA I ZHIZN, 1990, No 12, p 5.

9. Calculated according to data in: "Narodnoye khozyaystvo SSSR v 1987 g." [USSR National Economy in 1987], Moscow, 1988, p 74; "Narodnoye khozyaystvo SSSR v 1988 g." Moscow, 1989, p 322; EKONOMIKA I ZHIZN, 1990, No 12, p 5.

10. The extreme prudence and objectivity of the wording of this part of the policy statement of President M.S. Gorbachev of the USSR at the first session of the Presidential Council are striking.

11. IZVESTIYA, 20 February 1990.

12. EKONOMIKA I ZHIZN, 1990, No 12, p 5.

13. Ibid., p 11.

14. B.N. Ladygin, "Perestroyka of the Foreign Economic Operations of Enterprises and Associations," EKONOMICHESKIYE NAUKI, 1990, No 3, p 4.

15. Calculated according to data in "Vneshniye ekonomicheskiye svyazi SSSR v 1988 godu" [The USSR's Foreign Economic Relations in 1988], Moscow, 1989, pp 8, 18, 46-47.

16. N. Shmelev and V. Popov, "Na perelome: ekonomicheskaya perestroyka v SSSR" [At the Crossroads: Economic Perestroyka in the USSR], Moscow, 1989, p 304.

17. Ibid., p 305.

18. "Narodnoye khozyaystvo SSSR v 1988 godu," p 281.

19. IZVESTIYA, 28 January 1990.

20. For data for 1986-1988, see "Narodnoye khozyaystvo SSSR v 1988 godu," p 554.

21. IZVESTIYA, 12 July 1989; "Narodnoye khozyaystvo SSSR v 1988 godu," p 5.

22. "Economic Report of the President. Transmitted to Congress January 1989," Washington, 1989, p 96.

23. IZVESTIYA, 28 January 1990.

24. A. Shmarov and N. Kirichenko, "Inflation, Retail Price Reform, and Public Welfare," VOPROSY EKONOMIKI, 1989, No 8, p 28; KOMMERSANT, 1990, No 4, p 9.

25. "UN Economic Commission for Europe. Economic Survey of Europe in 1988-1989," New York, 1989, p 215.

26. J. Hecht, "Joint Ventures, U.S. Economic Development, International Relations and National Security," mimeo, for presentation at "Superpower Commerce: Economic Relations with the USSR and U.S. National Interests," Brown University, 2 December 1988.

27. See, for example, A. Sherr, "Socialist-Capitalist Joint Ventures in the USSR: Law and Practice," Briefing Paper 1, Center for Foreign Policy Development, Providence (R.I.), May 1988.

28. The authors' estimates are based on "U.S. Industrial Outlook 1990," U.S. Department of Commerce, Washington, January 1990, p 7, and the data of the USSR Ministry of Finance as of 8 December 1989.

29. A.G. Dongarov, "Inostrannyy kapital v Rossii i SSSR" [Foreign Capital in Russia and the USSR], Moscow, 1990, pp 31, 36-37.

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Risk of Inadvertent War
914K0001B Moscow SShA: EKONOMIKA, POLITIKA, IDEOLOGIYA in Russian No 7, Jul 90 (signed to press 28 Jun 90) pp 38-46

[Article by Vladimir Semenovich Belous (Maj Gen Res), candidate of technical sciences, senior scientific associate in research center of Committee of Soviet Scientists in Defense of Peace and Against the Nuclear Threat]

[Text] *The stone age could return on the radiant wings of science.* W. Churchill

The military-strategic parity between the USSR and the United States, which became a historical reality in the late 1960s and early 1970s, had a strong impact on the entire system of international relations. Most researchers of military-political affairs, including those in the West, agree that the maintenance of the military balance between the two opposing groups is an essential condition for international stability and the main obstacle to war.

Under the conditions of a continuous arms race, especially the race for nuclear arms, military-strategic parity cannot, however, eliminate the danger of war or guarantee a sufficiently high level of strategic stability in the world. In the language of mathematical logic, military-strategic parity is a necessary but still insufficient condition for the maintenance of peace in the present situation.

The cessation of the arms race, the lowering of the level of military confrontation, and the move to reasonable defensive sufficiency based on parity will reduce the danger of nuclear war considerably, including accidental war. This is attested to by the research conducted by the Committee of Soviet Scientists in Defense of Peace and Against the Nuclear Threat.¹

At this time the possibility of the accidental or inadvertent start of a war is one of the main factors diminishing stability even in the presence of parity.

When Soviet historian A.A. Kokoshin analyzed this matter, he listed the main groups of causes of accidental

war: technical malfunctions in operational systems, errors in data processing systems, inaccurate assessments of the situation by decisionmakers, and the mistaken actions and mental derangement of nuclear weapons service personnel.² We could also add the "lateral" proliferation of these weapons to the list.

Technical Malfunctions in Operational Systems

The very term "accidental start of war" is indissolubly connected with the appearance of weapons of mass destruction in the world arena, especially nuclear weapons. The development of long-range missiles which could deliver megaton warheads to targets thousands of kilometers away within minutes, made the boundary between war and peace quite fragile.

The most powerful weapon of the pre-nuclear era could not secure the possibility of delivering a surprise first strike capable of crushing the adversary. The accidental firing of the German "Big Bertha" or explosion of England's "Grand Slam" aerial bomb within the territory of a neighboring state would not have been likely to start a war.

Now the situation has changed radically. Many Western political and military officials have pointed out the exceptional danger of the accident factor.

Long-range missiles pose a particular threat of accidental release and activation in this respect. Their increasing complexity and autonomy have increased the probability of various malfunctions, technical errors, and accidents. In September 1980 a Titan II missile exploded in a silo on Little Rock Air Force Base (Arkansas). The shock wave carried the nuclear warhead dozens of meters. In January 1985 the solid-fuel booster of a Pershing II missile suddenly exploded on an American military base in the FRG near Heilbronn (Baden-Wuerttemberg). Fortunately, the nose-section had not been attached to the missile yet, but several such missiles with nuclear warheads were on alert status just 250 meters away. In June 1987 a bolt of lightning caused the igniting devices to malfunction in the solid-fuel boosters of Orion missiles and two small missiles which were out in the open, releasing and activating them, on a missile range on Wallops Island (Virginia).

Atomic submarines have not escaped dangerous incidents either. In April 1963 the Thresher sank in the Atlantic along with its crew and weapons. The same thing happened to the Scorpion in May 1968. In March 1986 the missile submarine Nathanael Greene, which was carrying 16 Poseidon nuclear missiles, suffered an equipment breakdown in the Irish Sea. According to officials, American missile submarines are not equipped with systems to prevent the accidental launching of missiles, and this makes accidents on submarines particularly dangerous.³

Obviously, it would be wrong to assume that only the American strategic "triad" is accident-prone. The reliability of complex combat equipment depends not on

the ideological views of its inventors and service personnel, but on the objective laws of the physical world. In October 1960 fuel components exploded on the Baykonur missile range when missiles were being readied for a test launch. Chief Marshal of Artillery M.I. Nedelin, commander in chief of strategic missile forces, and many soldiers and officers of the combat crew died in this accident.

According to reports in the foreign press, the powerful explosion of a launch vehicle on the same range in July 1983 was recorded as a bright flash by an American Nimbus satellite.⁴

In January 1978, a Soviet satellite equipped with a nuclear propulsion unit containing around 100 pounds of uranium-235 went out of control and fell to the earth in northwestern Canada—fortunately, in an unpopulated area.⁵

In 1984 a large quantity of ammunition on an air force base suddenly exploded. The force of the blast was so great that it was registered by seismic stations in neighboring states.

There have also been accidents on Soviet submarines. In March 1984 a submarine was damaged when it collided with the U.S. aircraft carrier Kitty Hawk. It returned to base accompanied by a convoy.

In October 1986 a ship of the Yankee class, carrying 16 ballistic missiles with two nuclear warheads each, sank near Bermuda as a result of a fire.⁶

In April 1989 the submarine Komsomolets sank in the Norwegian Sea. It was carrying torpedoes with nuclear warheads and cruise missiles.

In June 1989 there was an accident in the main propulsion plant on another submarine. The problem was cleared up and the ship, which was carrying torpedoes with nuclear warheads and cruise missiles, was towed to Severomorsk.⁷

We often hear critics assert that there have been many different accidents and disasters on nuclear weapon carriers, but these have not led to war. Why should so much significance be attached to these incidents? In answer to these critics, I must admit that the probability of an inadvertent nuclear conflict is relatively low, but the price of this kind of error would be extremely high—the end of the human race, which would be a victim of circumstance. The inordinately high price of accidents is the reason why researchers are studying the phenomenon of accidental nuclear conflicts.

Defects in Ballistic Missile Early Warning Systems

Errors and defects in ballistic missile early warning systems (BMEWS) would seem to have the greatest influence on the level of strategic stability and, consequently, on the growth of the danger of war. The BMEWS is known to be based on the use of complex electronic and optical systems distinguished by a high

degree of automation and numerous high-speed computers. The decision to declare alert status and deliver a retaliatory nuclear strike will be made on the basis of a signal from this system. The electronic computer receiving information from radar stations on land, in the world ocean, and in space must analyze the situation instantaneously, choose a command, and transmit it to the headquarters of strategic offensive forces. If the signal (which could be a false alarm) of a missile attack is issued and confirmed, this will be followed by a command to put strategic battle systems on red alert and deliver the first nuclear strike.

The data accumulation, storage, and processing subsystem used in choosing the command plays the decisive role in this process.

The unreliable functioning of BMEWS could lead to a nuclear conflict against the wishes of the country's top-level military and political leadership because misinformation will lie at the basis of the thinking process. The leaders of states will analyze the adversary's line of reasoning in a conflict situation, and the most probable basis for decisionmaking will be the worst possible assessment of the adversary's actions. This is when preparations to ward off "aggression" will begin. In turn, the probable adversary will receive information about the other side's military preparations from its own intelligence sources and will quickly take countermeasures. The escalation of military preparations, based on the original false information, will snowball. This would make nuclear disaster more than probable.

As American Professor P. Bracken pointed out, "no one wants war, but everyone would prefer to attack first. Instead of a choice between war and peace, there would be a decision to attack first or deliver a retaliatory strike."⁸

The Caribbean crisis of 1962 is a vivid example of the mutual misperception of the other side's intentions. In January 1989 a trilateral (USSR, United States, and Cuba) conference on this crisis was held in Moscow. Participants agreed that the world has never been as close to the brink of nuclear suicide in the postwar period as it was at the time of the 1962 conflict. They also agreed that no side wanted a war, but the false assessment of mutual actions led to the escalation of military preparations and put the world on the brink of nuclear disaster.⁹ It is no coincidence that when R. McNamara, who was the U.S. secretary of defense at that time, later described his state of mind in those days, he admitted: "When I left the White House and walked across the garden to the car to go back to the Pentagon, I was thinking that I might never see another beautiful spring evening like this one again."¹⁰

The BMEWS are known to be vulnerable to the influence of so-called errors of the first and second magnitudes, interrelated by probability correlations. In this case, the error of the first order is the false alarm. Missing an event (an enemy missile launch) would be a mistake of

the second order. It would be quite difficult to define the optimal "operating threshold" of BMEWS sensors. A high sensitivity threshold, which would be accompanied by strong protection against interference and, consequently, a low probability of false activation, poses the threat that the warning system might not react to an enemy missile launch. On the other hand, a lower sensitivity threshold might lead to frequent false alarms having no relationship to a missile attack. In this case, states would be much more nervous and more inclined to distrust one another, military-strategic stability would suffer, and the risk of accidental nuclear war would increase.

The potential dangers of BMEWS are revealed in an analysis of this system by American scientists. According to their calculations, the BMEWS of the United States issued 3,804 false enemy missile attack signals just between January 1979 and June 1980.¹¹ It would be wrong to idealize the Soviet BMEWS in this respect as well.

Coinciding accidental errors in BMEWS due to various factors would be particularly dangerous. Professor L. Sennot from the University of Illinois analyzed the probability of coinciding false alarms in early warning systems consisting of space sensors and ground radars. According to her calculations, twice the number of false signals in the two subsystems would quadruple the frequency of "confirmed" errors. If the number of errors were to increase from 100 to 200 a year, for example, the probable frequency of the false operation of BMEWS would be every 3.8 years instead of every 15.¹²

The accident in Chernobyl is a convincing example of the compounding of errors. The design flaws of the reactor were compounded by an accidental factor—the mistaken actions of the AES service personnel. The results were tragic.

Computer and software experts have voiced serious worries about the increasing complexity of the human being's interaction with "thinking" electronic aides. On the one hand, the improvement of computers makes them more autonomous and more independent of the human being, but on the other, designers are striving to develop an obedient machine which will act in the human interest in any situation. As a result, this kind of "intelligent" system engenders its own internal instability and puts the stamp of instability on the entire BMEWS.

Decades ago, prominent American scientist N. Wiener was already warning the advocates of the unrestricted use of computers for military purposes of this internal contradiction in the "thinking machines" which could cause them to escape human control.¹³

There is no doubt that the maintenance of international stability today necessitates the maximum enhancement of the reliability of BMEWS. Furthermore, each side must concern itself with the faultless functioning and informational reliability of its own BMEWS and the

system of the other side. This will necessitate the mutual renunciation of the concealment of missile launches, the advance notification of the other side of launches, the prohibition of the creation of interference with the work of early warning systems and, what is more, the establishment of the most favorable conditions for the functioning of both systems. This is the logical consequence of the profound interdependence of the security of countries on the global scale and their realization of the irrefutable fact that security at the end of the 20th century can only be common to all and equal for all or not exist at all. As the ancient Romans said in these cases: "Tertium non datur" (There is no third choice).

Destabilizing Nature of SDI

The American SDI program could become (if it is carried out) an extremely serious destabilizing factor, considerably increasing the risk of accidental nuclear war. It is no coincidence that the possible tragic effects on mankind of the launching of orbiting stations with weapons on board are examined in works by many scientists in the West and the Soviet Union.

The simplest analysis of the projected BMD system proves that it was planned as a global, sufficiently autonomous reconnaissance and battle-management system. Hundreds of orbiting stations with weapons and target detection, designation, tracking, and kill assessment systems will be united by functional connections in a single controlled macrosystem using high-speed computers. The BMD command and control system should secure the uninterrupted and foolproof collection, storage, and processing of data on hundreds of enemy launches, thousands of warheads, and hundreds of thousands of decoys and other means of BMD penetration. The processing of these huge quantities of data will only be possible on high-speed supercomputers (billions of operations per second) with real-time performance requirements.

The destruction of enemy missiles should be accomplished mainly in the boost phase. This means that the first, main space layer of defense should go into action within 100-300 seconds after liftoff, which virtually excludes human intervention. The burden of responsibility for making the fatal decisions distinguishing peace from war will be borne by computers, which will make up a complex and multileveled hierarchy. In view of the fact that the enemy will try to take countermeasures to neutralize the possible military advantages of the other side, it is easy to imagine the complexity of the space system's operations.

The faultless operation of the battle management system is virtually unattainable, just as the creation of absolutely reliable and fairly complex structures is unattainable in general. The projected BMD system should consist of thousands of elements, each of which could malfunction. Proceeding from the basic premises of the theory of probability, it seems logical to assume that the

probability of the breakdown of one or even several elements can be stated in some finite quantity.

The Challenger disaster offered conclusive proof that even elements which have been checked and rechecked and have been judged absolutely reliable can be influenced by a chain of coincidences refuting all predictions. According to the calculations of NASA experts, the probability of an accident in the booster rockets, which was the reason for the spaceship disaster, is 1:60,000—i.e., an average of one accident every 60,000 flights. American specialists discovered breakdowns and malfunctions in on-board computers in 5 of the first 20 space shuttle flights.

The second group of causes of a thermonuclear disaster is connected with the extreme complexity of SDI software. According to Halstead's theory, the number of errors in long programs is proportional to the logarithm of their length (the number of program lines).

A U.S. Defense Department technology research team concluded that the BMD control program would contain more than 10 million lines. Even on the purely theoretical level, the compilation of this kind of massive program seems completely senseless in view of the previously mentioned correlation. Many scientists have said that a defect-free program cannot be developed.

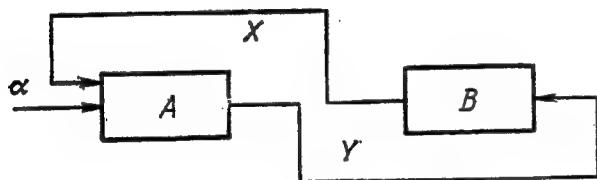
There is a vivid example of this. During the Anglo-Argentine conflict in the Falkland (Malvinas) Islands, one of the British Navy's best ships, the destroyer Sheffield, equipped with a modern automatic air defense system, was sunk. An investigation of the causes revealed that the English programmers of the ship's air defense system did not know that the Argentine Navy had recently acquired the French Exocet antiship missile. This missile is used by the armed forces of NATO countries and was listed as a "friendly" weapon in the destroyer's air defense control program. As a result of this error, when the missile approached the ship, the electronic countermeasure and airborne target destruction systems were not turned on. The missile passed through the air defense zone unimpeded and sent the destroyer to the bottom with a direct hit.

An obligatory phase of software development, especially for complex systems, is testing in a real situation (or a close approximation), during which the work of the entire system is checked in real time. Obviously, it is simply impossible to conduct field tests of a broad-scale BMD system deployed in space and on the earth. In addition to the colossal cost of this kind of experiment, conducting it under conditions approximating a real situation would require a mass launching of Soviet missiles to simulate a retaliatory strike. It is clear that U.S. specialists cannot expect the USSR to give them this kind of "cooperation" in developing the BMD system.

The verification of the reliability of the BMD control system with the aid of mathematical models cannot

guarantee that the program is error-free. This is confirmed by the experience in developing computerized systems, including the U.S. experience. The air defense system of the Aegis ships, for example, which was checked repeatedly by a variety of mathematical methods, envisaged the possibility of the successful simultaneous detection and destruction of several dozen attacking missiles. When field tests were conducted, however, 6 of the 16 attacking missiles penetrated the defense system successfully because of errors in the control program. The errors could only be eliminated by conducting more tests.¹⁴

The third group of reasons for the instability of the space-based BMD system is connected with the internal contradictions of the ultra-system. As Academician B.V. Raushenbakh pointed out, the unification of two independent systems (even if each is stable) frequently creates an unstable structure.¹⁵ This kind of global macrosystem would represent an enigma which would be a mystery even to its creators. Each side would guard its own secrets zealously, and no one would be able to guess how it works. The simplest analysis of this system from the standpoint of control theory indicates that its fundamental instability is the result of positive feedback between the subsystems making it up.



We will choose the simplest example to show how this system works. Let us assume that the independent reconnaissance and battle-management systems A and B, connected by flows of information, make up a single system A+B (see diagram). Let us assume that at some point signal α , having no connection with the operation of system B, entered system A. It might have come from space or from earth or might have been the result of some kind of collision in space. System A could interpret it as an alarm signal and take preventive measures and certain steps to heighten combat readiness. Information about these preparations (Y) will naturally enter system B, and it will take countermeasures to heighten its own combat readiness. Consequently, information X will enter system A and will reinforce the original signal. This more detailed information is certain to cause system A to take more decisive action, and the new information of this action will lead to new countermeasures by system B, and so on and so forth. This snowballing process contains a high risk of the accidental and unprovoked start of a war.

Human Factor in Outbreak of War

It is common opinion that the Moscow treaty of 1968 on the non-proliferation of nuclear weapons has played and is still playing an important role in reducing the danger of war. For the last two decades it has been a serious obstacle to the ambitious plans of some authoritarian regimes and revanchist groups. The development of science, technology, and especially nuclear power engineering, however, has created the objective physical prerequisites for the development of nuclear weapons in several states by giving them a chance to acquire fissionable materials. Some "near-nuclear" countries are already capable of producing nuclear weapons. According to experts, the number of "threshold" states could exceed 20 by the beginning of the 21st century. Under these conditions, the characteristic instability of military and political affairs in many parts of the world, and the armed conflicts which break out periodically in various regions, could provoke a nuclear conflict which is not likely to remain local.

The psychological phenomenon of nuclear weapons, which has not been completely explained by researchers yet, could motivate some hot heads to use this new technical basis for attempts to act on the once common assumption that "no one puts the victors on trial." As Soviet historian V.P. Lukin put it so eloquently, "in the dark back alleys of the worldwide political demimonde, there is no shortage of people meeting the ideological and pathological specifications for this 'mission'."¹⁶

The creation of huge nuclear weapon stockpiles and the provision of virtually all branches of the armed forces with an abundance of these weapons have led to a situation in which tens of thousands of servicemen are engaged in the maintenance, transport, and storage of these weapons. In the middle of the 1970's more than 150,000 people in the U.S. Army, Air Force, and Navy were authorized to handle nuclear ammunition. In spite of certain restrictions and requirements, some of these people suffer a nervous breakdown as a result of psychological pressure and emotional stress: They suddenly make reckless moves which could have the gravest consequences. When a person has to handle nuclear weapons, especially in emergency situations, he is put in an extremely difficult psychological position, in which his behavior might become absolutely illogical, unpredictable, and extremely dangerous to all mankind.

American Professor T. Sheridan pointed out the possibility of irrational behavior by certain individuals in an atmosphere of increasing psychological and emotional stress. He warned that the human operator is the most "enigmatic" of all "enigmas." The American press reported a case in which a mentally deranged U.S. Air Force sergeant fired his gun at a hydrogen bomb "to settle the score with life with a bang." Analyzing this problem, Professor M.A. Milshteyn remarked that around 5,000 servicemen are denied access to nuclear

weapons each year in the U.S. Armed Forces. They include alcoholics, drug addicts, and mentally unstable individuals.¹⁷

The actions of various extremist organizations, fanatical religious sects, and adventuristic groups in countries where nuclear weapons are deployed could also be dangerous. By exerting their influence on individual servicemen, threatening, bribing, or deceiving them, they could provoke a nuclear war. The miniaturization and improvement of nuclear weapons have created the real danger of nuclear terrorism. A weapon capable of sweeping an entire city off the face of the earth and of serving as the detonator of a major war, can fit into a small suitcase and be taken to any state in secret.

After the "electronic locks" had been installed on nuclear weapons, U.S. experts expressed the certainty that this was a reliable way of guarding against their misuse. Later, however, this certainty was seriously undermined, and they began speaking of the possibility of outside interference with the work of operational systems that seemed to be reliably protected by these intricate devices.

One example of this kind of interference with the work of military computers occurred in fall 1988, when around 6,000 computers of the automated Arpanet system were affected by a computer "virus." An investigation of the incident revealed that the "virus program" was designed by a young computer specialist who had fed it into the computer after guessing the access code for the data security system. After the "virus" had entered the computer memory, it began reproducing itself at an amazing speed, generating hundreds of parasitical programs which filled up the memory capacity of computers and made them inoperable.¹⁸

It is easy to imagine what might happen if some unscrupulous people should manage to figure out the access codes to the automatic battle management system of the SAC or the command and control system of the future space-based BMD.

The mounting threat of accidental nuclear conflict has faced the leaders of the states in the "nuclear club" with the need for preventive action.

The measures they took reduced the risk of thermonuclear conflict, but they cannot completely exclude this possibility. The threat of self-destruction, which is looming over the world today, can only be eliminated in conjunction with the complete elimination of nuclear weapons, the prohibition of the launching of offensive arms into space, and the creation of a reliable barrier to block the development of fundamentally new types of weapons.

Footnotes

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Skies over "Superpowers" (History of "Open Skies" Proposal)

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[Text] In May 1989 President G. Bush of the United States suggested that the United States and Soviet Union conclude an "open skies" agreement—i.e., the mutual right of unimpeded flight by non-military aircraft over one another's territory. At a conference on the "open skies" proposal in February 1990 in Ottawa, the foreign ministers of the NATO and Warsaw Pact countries began discussing this proposal. The discussion continued in Budapest from 23 April to 12 May. The sides agreed that the "open skies" agreement would strengthen trust between states, reduce the danger of war by making the military actions of states more predictable, promote arms limitation and disarmament, and assist in verifying the observance of commitments in this sphere. Skeptics admitted that the "open skies" agreement could become an important supplement to existing space-based means of observation and reconnaissance. The discussions indicated that the former "cold war" enemies were willing to give up what has traditionally been regarded as part of state sovereignty for the sake of building a system of collective security and strengthening mutual trust.

We can learn much from a comparison of these events with what happened 35 years ago, at the height of the "cold war," when President D. Eisenhower first suggested the "open skies" idea at a meeting of the heads of state in Geneva.

In the Clutches of Vulnerability

At some point toward the end of the Crimean War, the dying Tsar Nicholas I admitted that he was "handing down an impaired command." No one knows what Stalin was thinking when he lay dying in the dacha in Kuntsevo, but the Soviet Union was in the same position Russia had been in exactly 100 years before. Just 8 years after the victory over Germany and Japan, for which we paid an unprecedented price, our country was on the brink of war with a coalition of powers superior to it in all respects and headed by the United States. A web of military-political alliances was quickly taking shape around the USSR. The American armed forces had increased their might several times over during the years of the Korean War. Plans had been made for a breakthrough in strategic arms and were already being carried out by summer 1953. It was such a speedy process that the United States had already deployed more than 2,000 nuclear warheads and hundreds of bombers capable of delivering strikes at the Soviet Union by the middle of the 1950's. The new strategic B-52 bomber, which could reach any part of our country without stopping for refueling, was ready to use. If we remember that the

Americans were testing the first TX-15 superbomb in spring 1955, which would compound their nuclear strength, we can see how quickly the balance of power changed between 1953 and 1955, and not in the USSR's favor.

By the time of Stalin's death, suspicion and fear had become part of the relations between the two superpowers. People in the United States were convinced that Stalin had sanctioned the Korean War of 1950-1953 and that the USSR had not given up the plans to spread its sociopolitical system to the whole world.

According to N.S. Khrushchev, "the Americans had us believing that they might attack us at any moment. This was our impression, and Stalin was particularly convinced of this. He is the one who infected us with this fear." "Stalin...was frightened to the point of cowardice at the thought of war with America."¹ One of the "worst-case scenarios" was the following: West German revisionist groups would try to reclaim the territory they had lost in the east and would provoke a conflict between the USSR and the United States. Because of this, people in the Kremlin were extremely upset by the slightest signs of militarization in the FRG.

The Soviet leadership had many questions to answer. How could the growing military-strategic superiority of the United States and NATO be neutralized? How could the rearming of West Germany be stopped or limited? How could the attainment of security objectives be coordinated with long-overdue socioeconomic and political reforms within the country?

According to the logic of the "cold war," there were at least three options.

1. The assignment of priority to superiority in armed forces and conventional arms for the purpose of neutralizing U.S. nuclear superiority in strategic European areas.
2. The intensification of the efforts to develop strategic nuclear weapons and the means of their delivery.
3. The intensification of diplomatic efforts, including nuclear arms reduction and disarmament talks, which could turn international public opinion against any country striving for nuclear superiority.

It appears that Stalin never did make a choice, and this overtaxed the country—physically and emotionally. The Soviet armed forces numbered 5.76 million men,² which was an excessive burden for the country. The Soviet economy's potential at that time was approximately equivalent to one-fourth of the American potential, there was a sizable technology gap, and there were not enough highly skilled personnel. Besides this, millions of prisoners were still languishing in corrective labor camps in 1953-1955, and this took an irreplaceable bite out of national resources.

For a long time the "collective leadership" in the Kremlin could not decide how to escape this difficult

position. At the end of 1953, Chairman G.M. Malenkov of the Council of Ministers announced the need for the priority development of light industry instead of heavy (in other words, military) industry. He had to resign, however, after N.S. Khrushchev pointedly criticized his announcement at the CPSU Central Committee plenum in January 1955. The attempts at reconversion were impeded by dogmatism and fell victim to the power struggle within the "collective leadership."

The men in the Kremlin were ideologically and psychologically unprepared to agree to detente with the capitalist West. Although N.S. Khrushchev had actually been the leader of the country since fall 1954, he still had to consider the wishes of V.M. Molotov, L.M. Kaganovich, and other Central Committee Presidium members who did not want the "lull" in the confrontation with the West to compromise "class positions." Declassified dispatches from Western diplomats in Moscow mention Khrushchev's complaints about these officials and others who allegedly sabotaged detente with the West. In spite of the limited value of this testimony, it proves that the disagreements over defense and security issues were serious. A decision was made, after some bickering, to concentrate first on normalizing relations with the "fraternal countries," where Stalinism had installed authoritarian one-party regimes, and with the independent Marshal Tito, whom Stalin had expelled from the communist movement 5 years earlier.³ It was not until the July (1955) plenum that N.S. Khrushchev managed to secure a majority in the Central Committee leadership by adding M.A. Suslov, A.I. Kirichenko, A.B. Aristov, N.I. Belyayev, and D.T. Shepilov to its membership.

Khrushchev's policy toward the West, however, retained the "birthmarks" of Stalinism. Negotiating "from a weak position" was unthinkable. The matter was complicated by Khrushchev's inexperience in foreign policy. The resulting inferiority complex and insecurity gave rise to bravado, impulsive behavior, and sometimes even reckless acts. This was displayed most clearly in the second half of Khrushchev's period as leader. Nikita Sergeyevich never forgot how Stalin used to intimidate the Politburo members: "You are like blind children, you are like kittens, and the imperialists will wring your necks after I am gone." The country's leaders were genuinely tormented by the thought that they might be unable to represent their country competently in negotiations and might yield to the intimidating tactics of their adversaries. The image Stalinism had created of the insidious and ruthless "imperialist" haunted Khrushchev and his colleagues when they made their first timid moves on the international chessboard.⁴

The country continued to move inexorably toward "cold war," striving to strengthen its security by building up its military-strategic might instead of by negotiating with the West. It is no coincidence that the troop strength of the Soviet Armed Forces had undergone virtually no reduction 2 years after Stalin's death and the end of the Korean War.

It is also an important point that most military leaders were more inclined to view nuclear weapons as a supplement to conventional forces rather than as a counterbalance to them. There were differences of opinion among military and political leaders: Some agreed with the NATO generals that a nuclear war would call for a higher, and not lower, number of soldiers and tanks. Others, who were more reasonable, realized that the United States' tremendous strategic advantage would preclude quick progression to the English Channel.

In spring 1954, G.M. Malenkov said that a world war would mean the end of all civilization, but a month later he was forced to declare, to the accompaniment of loud applause, that this kind of war would crush the aggressor and cause the collapse of the capitalist social system.⁵ Apparently, at that time there was still no awareness that the era of nuclear confrontation would revolutionize the meaning of all aspects of security, including the composition of the armed forces and the attitude toward the holy of holies—military secrecy and intelligence.

The "Secrecy Factor" in Soviet Security

The reluctance to face the "nuclear dilemma" was partly due to the constant growth of the U.S. military-strategic advantage over the Soviet Union. American researchers G. York and D. Holloway suggested (this was indirectly confirmed by the Soviet side just recently) that the Soviet hydrogen bomb, which was set off in 1953 and was declared the "first in the world," was not really more powerful than ordinary atomic bombs. It was not until 22 November 1955 (21 months after the tests of the first American Bravo hydrogen bomb) that the Soviet side managed to set off a bomb of over 1 megaton.⁶

The main thing was that the Soviet side did not have any reliable strategic carriers at that time. It is true that the heavy M-4 bomber had been developed by 1954 (it was called "Bison" in the West) and that the first Tu-95 appeared shortly afterward (known as the "Badger" in the West). It did not take long, however, for Soviet political and military leaders to realize that they could not pose a strategic threat to the United States.⁷

The United States' absolute superiority in this area was no secret to anyone. A particularly insulting sign of it was the flights over much of Soviet territory by American planes taking off from bases in Turkey and Western Europe, which were interpreted by everyone as a demonstration of American superiority and our weakness.

The USSR, however, had an "advantage" the United States did not have—the legacy of Stalin's total isolation of the Soviet society and insistence on absolute secrecy in military matters. In Stalin's lifetime this helped to conceal the flaws and defects of the terroristic authoritarian regime, including shortcomings in the attainment of national security objectives. This "advantage" continued to work in the middle of the 1950's. Even if the United States was superior to the USSR in the number of

strategic carriers and had been able to encircle it with a ring of bases, the USSR was still almost inaccessible to American intelligence.

Today it is hard to say where the obsession with secrecy and suspicion ended and bravado and outright bluffs with regard to our military capabilities began. Soviet military leaders, for example, assured us that our air defense system was an impenetrable shield. On 7 February 1955, when USSR Defense Minister G.A. Zhukov was interviewed by W. Hearst, K. Smith, and F. Conniff, he said: "We have everything we need for a reliable defense." Our air defense command maintained that a surprise attack on the USSR by the American Strategic Air Command (SAC) would be impossible.⁸

It is true that our air defense forces frequently shot down American medium-range planes flying over USSR territory at that time, killing the American pilots. Our airborne forces had acquired considerable experience in the air battles in the Korean War. There is no question, however, that our country was still "penetrable" to the American SAC then.

To some extent this was a case of self-deception. The insistence on absolute secrecy and the resulting strategic uncertainty for the Americans who did not know the extent of our capabilities and were not certain of our intentions, however, became an extremely important factor in our national security.

Between 1951 and 1953 this annoying uncertainty deterred some of the American politicians and military officials who had considered the expediency of delivering a preventive strike against the USSR before it could become a nuclear superpower.⁹ When D. Eisenhower took office, however, he quickly realized that the military value of nuclear weapons was limited. The appearance of the hydrogen bomb reinforced his doubts. According to one of his assistants, he "became more and more convinced that it was absurd to even think of using this weapon."¹⁰

The logic of "nuclear intimidation," however, encouraged the Americans to override the Soviet factor of uncertainty with a colossal numerical advantage in first-strike nuclear weapons. In other words, under the conditions of the thermonuclear arms race and the appearance of new delivery vehicles in the USSR, the isolation of the Soviet society and the absolute secrecy of military preparations not only (and not so much) served as factors deterring the United States, but also did much to promote the continuous buildup of American strategic potential. It was important to sustain the West European allies' belief that the Americans would not hesitate to use their nuclear potential in the event of a conflict in Europe. As a result, the administration decided to double and triple the American nuclear arsenal on all levels, from strategic to tactical, in order to dispel any doubts about the absolute nature of guarantees of the security of the United States and its allies.

Besides this, the less the administration knew about the Soviet Union's capabilities and intentions, the more it tried to fill the Soviet leadership with terror. The Soviet leaders were not supposed to forget for a single minute that a nuclear Damoclean sword was hanging over them. This was the reason for Dulles' "brinkmanship" and for his famous speech of 12 February 1954, in which he reserved the United States the right to inflict penalties at any time and in any place it chose.

The "secrecy factor" of Soviet security thickened the already pervasive atmosphere of suspicion. The McCarthyist hysteria of 1953 and 1954 meant that no career diplomat could move up the State Department ladder until his "loyalty" had been checked by the FBI.¹¹ Analysts in the intelligence offices of all departments chose to display "vigilance" and predicted a "nuclear Pearl Harbor" by the Soviet heavy bombers which were still so few in number and so imperfect in design. When the M-4 bomber was first displayed in Moscow during the May Day parade in 1955, American intelligence agencies inundated the White House with hysterical predictions.¹² Under this pressure, Eisenhower formed a group of experts, headed by J. Killian, to investigate the possibility of a "surprise attack." The commission's conclusions did much to accelerate the development of missile carriers and the improvement of strategic intelligence. Eisenhower was so worried that the fear and the alarming uncertainty would cause the arms race to spin out of control, that he made the secret decision to develop the high-altitude U-2 manned spy plane. It was supposed to supply the President with incontrovertible data on the state of the USSR's military-strategic arsenal.

The isolated nature of the Soviet society made it impossible for the administration to draw accurate conclusions about the changes in the country and in the leadership after Stalin's death. The administration had a vague idea of the struggle in the top Kremlin circles and it had the isolated bits of information that did somehow reach the United States and were invariably given the worst possible slant. Anyone who did otherwise was automatically categorized as a "communist sympathizer."¹³ As a result, the extreme secrecy of Soviet affairs compounded mutual fear and suspicion.

Two Views of the Sky

Although the necessary trust and realization of the common interest in averting nuclear war still did not exist, the leaders of the United States and the USSR met in Geneva in summer 1955 for a quadrilateral conference, which was preceded by several unilateral moves designed to secure psychological advantages in the "cold war" and also to relax tension.

The first move was Eisenhower's announcement of the "Atoms for Peace" plan in December 1953. The Soviet Union then took some initiatives in the sphere of disarmament under the influence of the threat of the FRG's remilitarization: Disarmament proposals representing the first serious postwar package of initiatives in this

sphere were set forth on 10 May 1955. The proposals were prepared by a group of experts from the International Organizations Department of the USSR Ministry of Foreign Affairs, headed by K.V. Novikov, in conjunction with the General Staff. As one veteran of the Soviet diplomatic service recalls, this was an attempt to find a more or less realistic basis for possible negotiations and agreements. If the Western powers had been prepared for this, the package could have become the basis for serious talks, although certainly not in the form in which it was proposed.

The first reaction to the proposals by Western representatives on the subcommittee of the UN Disarmament Commission held out the hope that although the positions of the sides were still quite far apart, they might be reconciled in negotiations. This hope was apparently based on the fact that it would have been difficult for Eisenhower not to respond to the Soviet initiatives. Another consideration was the American president's opinion that serious talks with the USSR could begin only after the question of Austrian neutrality had been settled: An agreement on Austria was concluded a month before the meeting in Geneva. The USSR ultimately supported another of Eisenhower's proposals, "Atoms for Peace," and made a sizable contribution to the IAEA—50 kilograms of fissionable materials.

Some members of the Eisenhower administration and of the Democratic opposition, however, clearly preferred the risk of an unbridled arms race to any conceivable agreement with the USSR.¹⁴

The U.S. political and military leadership of that time was disgusted even by the thought of recognizing the USSR as a superpower with legitimate interests and conducting authentic bilateral talks with it. The United States' overwhelming strategic superiority seemed eternal: Even questions about its future value were seen as signs of disloyalty. As for diplomats and experts on international relations, many acted under the strong influence of diplomatic experience during the period between the two world wars. In particular, they felt that seeking compromises in talks with the Soviet leadership would have the same results as the "appeasement of the aggressor"—Fascist Germany—at the talks in Munich in 1938. The memoirs of veterans of the Eisenhower administration mention the strong impression the failure of the disarmament efforts in the 1930s had on J.F. Dulles.¹⁵

According to archives, when the administration was preparing for the Geneva meeting, it had no serious intention of arranging for bilateral talks with the Soviet Union on confidence-building measures and arms control. It only wished to calm down its West European allies, especially the Conservative government in Great Britain, which had been frightened by the rhetoric of "massive retaliation." It also wanted to learn the true intentions of the Soviet leadership, but without any expectation that the results would be positive.

In spite of all this, Eisenhower could not come to the conference with an empty briefcase. In the first place, the Soviet plan of 10 May took the proposals of Great Britain and France on the reduction of conventional arms in Europe fully into account and, in the second place, it envisaged inspections of the sites of possible ground troop concentration (railway stations, ports, etc.) to prevent surprise attacks. Because the United States was not prepared for the former and did not believe in the efficacy of the latter, it had to do something to divert public attention from the Soviet proposals and return the psychological initiative to the administration.

The "open skies" plan became this initiative. The history of this proposal has not been reconstructed in full as yet, and existing studies suffer from serious omissions.¹⁶ Two of the President's advisers, N. Rockefeller and H. Stassen, later claimed to have come up with the idea. Professor W. Rostow, a member of Rockefeller's group, gives himself most of the credit. Historian S. Ambrose believes that Eisenhower himself was the father of the "open skies" proposal.¹⁷ The probable truth is that the President was the author of the plan, while the CIA experts were the co-authors.

The President of the United States knew something Rockefeller and Stassen did not know: There had been amazing progress in intelligence equipment. He had been informed that satellites, equipped with highly accurate cameras and capable of transmitting images to earth, would be ready for use within 2 or 3 years. Then, whether the Russians wanted it or not, technology would "open the skies" over the superpowers.¹⁸

Only D. Eisenhower, A. Dulles and R. Bissel from the CIA, and A. Goodpaster knew that scientists and engineers from the Lockheed and Kodak corporations had developed an experimental model of a miracle of modern intelligence—the high-altitude U-2 plane. Bissel reported this to the President in February 1955—i.e., several months before the birth of the "open skies" initiative.¹⁹ The final tests of the plane were scheduled for summer.

The "open skies" idea was discussed and enveloped in an excellent propaganda wrapper by a group of non-governmental experts who gathered together on the Quantico naval base (Virginia) under the supervision of N. Rockefeller, the President's special assistant for foreign policy affairs. Just before the meeting in Geneva, Eisenhower decided to use his new trump card and summoned Rockefeller for a final briefing.

When Eisenhower's advisers discussed the "open skies" proposal, they all agreed on the main thing: The plan would not hurt the national security or current and future military preparations of the United States and it would take advantage of the Soviets' "weak spots." Whatever the circumstances, the proposal was sure to give the United States a great propaganda advantage without putting any restrictions on present and future U.S. strategic advantages.

Above all, official documents indicate that no member of the administration regarded air inspections as a prelude to any kind of arms limitation or reduction. Even the possibility of nuclear arms control was categorically excluded. The basis was the position of the Atomic Energy Commission (AEC), headed by Admiral L. Strauss, which was recorded in dozens of now declassified documents and said: "None of the technical methods we have developed will be enough in itself to let us know for certain when part of the fissionable materials (intended for civilian atomic power engineering—V.Z.) is diverted for the production of a significant number of atomic weapons. There is no effective method of detecting fissionable or thermonuclear materials for nuclear weapons if they are kept secret."²⁰ Strauss later made it clear that the enterprises and installations of the U.S. nuclear complex should not be subject to inspection—land or air. This point of view was wholly supported by the chiefs of staff and even by H. Stassen, who often disagreed with the head of the AEC in all other areas.

The final section of the arms control report Stassen submitted on 23 June contained the unequivocal statement that "the United States must not sacrifice its present position of superior strength for the sake of agreements and, consequently, must not make any special concessions to the USSR." During a discussion on 20 July, Stassen constantly "repeated that modern technological installations should be excluded from the category subject to inspection." Eisenhower himself believed that "the Russians already have the means of learning the location of virtually all of our installations, and a mutual agreement on overflight rights is certain to mean more to us than to the Russians, because we know very little about their installations."²¹

The new proposal drove Soviet delegates into the disturbing arena of arguments about inspections and restrictions of national sovereignty, where, as the Americans were fully aware, the position of the USSR was absolute negative and unyielding. It is no wonder that Rockefeller and Dulles, the main champions of propaganda "victories" over the USSR, were delighted.

Nine years later Eisenhower stated: "We knew the Soviets would not accept it (the "open skies" proposal—V.Z.). We were sure of it."²² It is true that the President and his advisers must have known that the American advantage in national means of technical surveillance would not simply "balance the scales" for American and Soviet intelligence, but would tip the balance of power again in the United States' favor. Other sources confirm that neither Dulles nor the chiefs of staff expected the Soviet Union to agree to aerial photographs or the exchange of defense enterprise plans.²³

Later books and articles by Soviet authors unequivocally described our leadership's rejection of the "open skies" proposal as the correct response: In the middle of 1955 this plan was unacceptable to the USSR because it could have compounded the Soviet feelings of vulnerability

under the conditions of the United States' absolute strategic superiority and could have tempted the Americans to deliver a first, pre-emptive thermonuclear strike at the Soviet military-industrial potential.²⁴

This reaction, however, was dictated less by military-strategic considerations than by emotions: the Soviet side's suspicions, hurt feelings, and ideological biases. This was the new Soviet leaders' first diplomatic meeting with the leader of the United States, and they wanted to be taken quite seriously and to engage in substantive negotiations. In contrast to the American side, the Soviet leadership wanted to begin a dialogue with the United States on an equal basis and was sensitive to the slightest attempts to "put it in its place."

The Soviet delegation was extremely disillusioned when it received a surprise—the "open skies" proposal—from Eisenhower instead of a compromise on Germany and a discussion of the Soviet proposals of 10 May. Khrushchev, who set the tone in the Soviet delegation, decided that Eisenhower was letting his secretary of state do his thinking for him and was incapable of taking any bold steps to meet the Soviets halfway.²⁵ He called the President's plan an attempt to "legalize blatant spying," and he was supported by G.K. Zhukov, who was, as were all the rest of our military leaders, held in check by the rules of extreme secrecy and the memory of the repressions of 1937.

History reveals why the "open skies" proposal did not work in 1955 and why it has become possible today. The superpowers were striving to strengthen their own security and the security of their allies without caring at all about the other side's reaction. Their absolute mistrust of one another was combined with the deep conviction that any kind of negotiations could only be a situation in which one side's gain (in the strategic balance or in propaganda) would have to be offset by a loss on the other side.

The degree to which the psychological assessments of the enemy state's capabilities and intentions propelled both superpowers into an arms race, no matter how much information they had about one another's military potential, warrants consideration. There is no question that the USSR and the United States now have much more complete and accurate information about one another's strength than they did 35 years ago, but the Soviet and American intelligence communities were kept busy even then. Even the factor of uncertainty, stemming from the extreme secrecy and impenetrability of our society, must not be overestimated. The main thing was not our ability to conceal some things from the Americans (this applied more to our plans for new weapons than to our existing forces), but our desire to conceal everything. It was no easier for the Soviet side to judge the United States' intentions, even though the massive buildup of U.S. strategic potential was being conducted more openly. The two countries saw each other as enemies and were making preparations for a real war without wanting one.

In spite of the dramatic events following the Geneva conference—the nuclear missile race, the destruction of the U-2 plane, and the resulting serious crisis in Soviet-American relations—we do not have the right to say that the “open skies” proposal was an opportunity we missed in 1955. Only the political changes in the Soviet society and in Eastern Europe, as well as the painful awareness of the nuclear stalemate, could have turned the idea of two American presidents into a genuine contribution to future collective security.

Footnotes

1. Taken from a record of N.S. Khrushchev's memoirs in the archives of Columbia University in the United States, prepared for the author by M. Evangelista, professor at the University of Michigan (Ann Arbor).
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3. PRAVDA, 17 November 1989.
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5. IZVESTIYA, 13 March 1954; 27 April 1954.
6. D. Holloway, “Research Note. Soviet Thermonuclear Development,” INTERNATIONAL SECURITY, Winter 1979/80, pp 193, 195; “For the Sake of Nuclear Parity,” LITERATURNAYA GAZETA, January 1990, p 17.
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11. “Interview with Edward Freers,” The John Foster Dulles Oral History Collection, p 27, S.G. Mudd Manuscript Library, Princeton.
12. J. Prados, “The Soviet Estimate. U.S. Intelligence Analysis and Russian Military Strength,” New York, 1982, pp 41-50; according to some reports, the aircraft flew over Red Square several times in order to “intimidate” the Western military attaches, causing many to overestimate the rate of the construction of Soviet long-range bombers.
13. C. Bohlen, “Witness to History, 1929-1969,” New York, 1973, p 357; interview with A. Goodpaster on 2 May 1989.
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22. See the interview with D. Eisenhower of 28 July 1964 (S.G. Mudd Manuscript Library, D. Eisenhower Interview, Princeton, 1964, p 44).
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